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Assessing the Influence of Green Accounting Practices on Mining Companies' Financial Outcomes

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Abstract

This paper examined the influence of green accounting policies on financial performance, an area of increasing importance as organizations strive to align financial and environmental objectives. Green accounting, recognized as a vital environmental management tool, informs stakeholders about a company's ecological practices and concerns, with standards such as ISO 14001 highlighting potential positive impacts on financial outcomes. Despite existing literature suggesting a beneficial link between green accounting and financial performance, this study aimed to investigate this relationship more deeply through a quantitative approach using questionnaires as data collection tools. Data was collected from one mining firm to explore how the adoption of green accounting practices fosters innovations in product design, enhances company reputation, and reduces operational costs. Findings indicate that these policies not only contribute to sustainable practices but also improve financial performance by driving efficiency and brand loyalty. Additionally, the study emphasizes the importance of fostering environmental awareness in host communities to strengthen the relationship between mining companies and local stakeholders. This research offers significant contributions to the literature by providing empirical insights into the mechanisms through which green accounting influences financial outcomes, thereby highlighting its value as a strategic tool in corporate environmental management.

Keywords: green accounting policies, financial performance, environmental accounting, environmental audits

JEL classification: M41, M49, Q56

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1. Introduction

In recent years, the intersection of environmental sustainability and financial performance has gained prominence, particularly in high-impact industries such as mining. As global awareness of ecological issues increases, stakeholders including investors, regulators, and communities are urging mining companies to adopt more sustainable practices. Green accounting has emerged as an essential framework that combines financial data with ecological considerations, enabling organizations to measure their environmental impact, and manage resources more effectively. By adopting green accounting policies, mining companies can not only navigate regulatory requirements but can also unlock opportunities to enhance their competitiveness and strengthen their brand reputation.

Despite the increasing advocacy for green business practices, there remains a significant gap in understanding the direct influence that green accounting policies exert on the financial performance of mining firms. Existing literature predominantly focuses on the conceptual benefits of environmental management practices, without substantiating these claims with empirical evidence specific to the mining sector. Furthermore, few studies have explored how green accounting practices contribute to operational efficiencies, innovations in product design and the overall stakeholder perception of mining companies. This paper aims to bridge that gap by investigating the relationship between green accounting practices and financial performance through a focused study of a specific mining firm, thereby providing a more nuanced understanding of how such policies can drive both sustainability and profitability.

To ensure a comprehensive analysis, the study will not only delve into the direct financial implications of green accounting but also explore its broader impacts, such as fostering innovation and enhancing stakeholder relationships. By employing a quantitative methodology through structured questionnaires, the research seeks to gather robust data that highlights the potential synergies between adopting green accounting practices and achieving favorable financial outcomes. The goal is to provide empirical insights that can serve as a vital resource for mining companies and stakeholders aiming to align their financial objectives with sustainable practices.

The structure of this paper is organized as follows: The first part presents the background of the study, identifying gaps in the existing research. Next, it outlines the main research questions and sub-questions that guide this study. Following this, the theoretical framework is discussed, along with an overview of empirical research conducted by previous authors. The methodology employed in this study is then described, followed by a presentation of the results and a discussion of these findings. Through this structured approach, the paper aims to elucidate the extent to which green accounting policies influence the financial performance of mining companies, thereby contributing to the broader discourse on sustainability in business practices.

1.1. Background

Green accounting or *environment accounting* is a term with diversity of meanings. Green accounting is often interpreted to mean identifying and disclosing costs relevant to the environment, according to Nkwoji (2021). The objective is to provide data on the business operational performance based on the environmental factor. Astuti (2021) asserts that the disclosure of environmental repercussions is a sign of accountability to stakeholders. The research study can therefore be focused from a more general standpoint through revising earlier empirical researches of Myer and Myer (2015), who made a research on companies in the mining sector operating in Africa, Asia, Europe and established mixed inconclusive respondents. Some respondents were asserting that a positive correction exists, whilst some respondents were airing otherwise, due to the inverse relationship between the adoption of green accounting principles and financial status.

In this context, according to research conducted by Makanga (2018) on effects of environmental accounting policies on African companies, these policies have a detrimental effect on business financial performance because they call for companies to include green accounting costs like external overheads in their statements of financial position, which drives up expenses and lowers a company's profitability. A parallel investigation on African mining companies was done by Nwosa (2018) and claimed that green accounting practices have a beneficial impact on their financial performance, because they allow them to determine their genuine financial performance and take the drastic steps necessary to improve it. In contrast, a study by Alimalik (2020) found that corporate responsibility spending raises enterprises' return on equity. Quereshi (2016) argues that the report is essential for the purpose of sustainable growth, because it considers present, past and future costs for pollution control, reduction of toxic and industrial wastes, the elimination of environmental costs and the advantages of capital expenditure made in both products and processes. Additionally, Egbunike and Eze (2017) indicated that there is a very strong correlation amongst corporate social responsibility and return on equity.

To convey the argument home, by means of a sampling of mining companies in the Southern African, Swazi (2017) indicated the notion that environmental accounting policies requires local bodies to unveil a true portrait of costs versus returns. Violation of rules will attract minor fines and penalties, this will therefore lead to an increase in costs and reduce corporate liquidity. On the other hand, Shumba (2015) carried out an investigation on companies in the mining sector conducting their work in Africa in the Southern region and concluded by resolutely following established green accounting policies and practices, the investment level of mining firms' profitability stock turnover days and liquidity could be increased. Mutema (2017) took a representative sample of all companies operating in Zimbabwe, brought home the argument that green accounting enhances honesty and accountability, which stand as the cornerstones regarding the company's financial performance. On the other hand, Mutetwa (2018) suggested that the policies of green accounting really do more harm than good in the financial statements of companies in the mining sector from the time when they mandate the disclosure of marginal external expenses, which has a negative impact on their financial standing.

1.2. Research question

- *What is the impact of green accounting policies on the financial performance of mines?*

- ***Research sub-question***

- *What are the benefits of implementing green accounting?*
- *What are the factors that affect the implementation of green accounting?*
- *What recommendations are suitable for improving the effectiveness of green accounting policies?*

2. Literature review

2.1. Theoretical framework

The theories in applying environmental accounting are stakeholder and legitimacy theories. This is since green accounting focuses on the development of sustainability that is being implemented in business with the worry of stakeholders, while the theory of legitimacy holds that stakeholders must provide legitimacy to the corporation for the company to create its image among its stakeholders.

- ***Stakeholder theory***

"The widespread term stakeholder initially originated in 1963 from side to side with the research done by Stanford Institute", according to Clayton (2014), answering the philosophy that "stakeholders are merely a group which the management are supposed to give attention in case they are conducting meetings" (Freeman *et al.*, 2012). "Stakeholders involve people from outside and inside who have an impact on and could possibly be influenced by a company's action, according to the creator of stakeholder theory Edward Freeman. This concept states that all stakeholders have the right to know about the effects of a company's activities on the environment." (Deegan, 2016) The theory aims to develop "strategies that will allow organizations to benefit the stakeholder" (Handriyani, 2013; Wadesango *et al.*, 2020c).

Agustine (2014) is of the opinion that "the stakeholder's theory was a theory that explained how company management met or managed the stakeholders' expectations. The foundational ideas of the theory imply that ties between organizations and their numerous stakeholders are expected. The foundational ideas of the theory imply that ties between organizations and their numerous stakeholders should be severed and that diverse stakeholders should be treated equally.". According to Phillips (2012) and Marens and Wicks (2015), "companies must consider the welfare of society, nature and be ethical under the stakeholder concept". Permatasari and Setyastrini (2019) are of the opinion that "the company is committed to presenting environmental information to stakeholders, because the stronger stakeholder ties the corporate sends, the better the company will be vice versa".

Furthermore, companies should retain their stakeholders by meeting their wants and needs, particularly the stakeholders with the most power (Ghozali and Chariri, 2007, in Tarigan and Semuel, 2014). "As a result, the organization's sustainability is dependent on the support of stakeholders, which must be obtained by the business. This is due to the importance of stakeholders in a company's sustainability. A strategy for maintaining relationships with stakeholders is to provide a sustainability report that includes the company's economic, social, and environmental aspects." (Phillips, 2012) Mandika and Salim (2015) are of the opinion that "it focuses not only on improving well-being but also on improving stakeholders' well-being. According to this understanding, the company must consider the welfare of stakeholders who have an impact on the company's survival. Established businesses must consider how they can benefit their stakeholders, as well as how they can increase their revenues". As a result, businesses, capital markets and others are all participants in the organization. "This theory assumes that a company's business activities are carried out not only for the benefit of the company but also for the benefit of its stakeholders. As a result, this stakeholder theory is a company strategy for maintaining its relationship with stakeholders." (Oktariani, 2013)

■ ***Applicability of the stakeholder theory to the current study***

Like most theories, stakeholder theory is a tool for better describing and acting in a complex world. The theory focuses on the distribution of financial outputs (Phillips, 2012). "This viewpoint portrays stakeholder theory as being primarily concerned with whom receives the organization's resources, posing stark and inherent conflicts between shareholders and other stakeholders in terms of who gets what." (Phillips, 2012) According to Leon (2018)'s research, "the implementation of green accounting has a positive relationship with sustainable development". Green concepts, according to Marota (2017), "have a significant impact on the sustainability dimensions. The application of environmentally friendly production is the focus of the green concept. The use of green accounting by a company has undoubtedly indirectly carried out its responsibilities to stakeholders.". The study's goal is to determine how green accounting policies affect firm financial performance. "Finally, there are good reasons to believe that stakeholder theory increases managers' accountability, because they have more obligations and duties of care to more constituencies and are thus less likely to engage in self-dealing." (Egbunike and Eze, 2017)

■ ***Legitimacy theory***

According to Deegan and Unerman (2011), in Omran and Ramdhony (2015), "the legitimacy theory is based on the idea that there is a social contract between an organization and the society in which it operates". "The legitimacy theory employs motivation to gain community support. This notion implies that system management of businesses that stand in the community (society), community groups, and government individuals is what constitutes legitimacy, and that as a system that is pro-social, a company should be in line with society's expectations. According to legitimacy theory, organizations strive to ensure that their operations adhere to the boundaries and standards of the communities in which they operate." (Laan, 2009, in Tarigan and Semuel, 2014). "This notion holds that organizational actions must include socially acceptable activities and performance. When there is a disparity (incompatibility) between the two systems, there is a threat to society's legitimacy. Managers must meet society's expectations to create a legitimized company status." (Deegan, 2019)

■ ***Applicability of legitimacy theory to the current study***

According to legitimacy theory, companies actively seek and maintain legitimacy by aligning company values, policies, and strategies with community values (Tarigan and Semuel, 2014). "Green accounting can be viewed as a company's strategy for gaining and maintaining credibility. The reason for this is that green accounting enables businesses to manage the environmental impacts of their operations by reducing energy consumption, carbon emissions, and other negative effects. Green accounting can improve a company's reputation and competitive advantage." (Deegan, 2019) Berry (2018) believes that "success in environmental management can eventually increase firm value. As a result, there is a need to determine the impact of green accounting on firms' financial performance.".

2.2. Empirical review

■ ***Green accounting***

Green accounting is a strategy to incur costs while gaining advantages for the environmental benefits (environmental). It provides information that assist managers in assessing, running, managing, making decisions, reporting, and safeguarding the environment. Environmental cost accounting is adding information about environment costs to the current cost accounting system, finding hidden environmental costs and allocating such costs to the appropriate manufacturing or product lines. According to Makori and Jagongo (2013), "green accounting is the practice of accurately disclosing in a firm's annual reports and accounts the likely social costs resulting from production externalities on the environment and the number of intentional intervention costs incurred to close the gap between marginal social and private costs".

The Japanese Ministry of Environment defined green accounting as a quantitative assessment of the expenditures and benefits in environmental protection activities, as well as systematic records and reports, maintaining a positive relationship between enterprises and natural ecology, and the promotion of effective and efficient environmental activities, in order to achieve sustainable development (Phillips, 2012). According to Bahri and Cahyani (2021), "green accounting measures the environmental impact and damage that a company's commercial operations have on the environment and is the result of that firm's effort to protect the environment. They also stated that environmental performance variables can be measured using the Company Performance Rating Assessment Program (PROPER) in Environmental Management, which is a tool developed by the Ministry of Environment and Forestry to assess a company's environmental management capabilities. The Company Performance Rating Program can be used based on the colour classification. The company's environmental performance is measured using a Likert scale.".

■ ***Financial performance***

According to specialists, financial performance is an examination performed to determine the amount that has been accomplished by a corporation using excellent and suitable financial implementation criteria. Wahlen *et al.* (2010) are of the opinion that "financial performance shields, between additional things, estimating a return on asset. The return on asset is calculated by dividing the period by the average total assets.".

■ ***The impact of green accounting policies on financial performance***

The research study can therefore be focused from a more general standpoint through revising earlier empirical researches of Myer and Myer (2015), who did a research on companies in the mining sector operating in Africa, Asia, Europe and established mixed inconclusive respondents were asserting that a positive correction exists, while some respondents were stating otherwise, due to the inverse relationship between the adoption of green accounting principles and financial performance. A parallel investigation on African mining companies was done by Nwosa (2018) and claimed that "green accounting practices have a beneficial impact on their financial performance because they allow them to determine their genuine financial performance and take the drastic steps necessary to improve it". On the contrary, according to research conducted by Makanga (2018) on effects of environmental accounting policies on African companies, "these policies have a detrimental effect on business financial performance because they call for companies to include green accounting costs like externality overheads in their statements of financial position, which drives up expenses and lowers their profitability. This indicates that there is a need to investigate the effects of green accounting methods on financial performance.".

Makanga (2018) noted that "green accounting policies such as ISO 14001 standard reveals a positive relationship on financial performance. They further highlighted that this is because implementation of green accounting policies can increase company reputation and competition.". Ratulangi (2018) is of the opinion that "a positive relationship exists because of the merits of business entities in incorporating green accounting methods, as it reveals important information for businesses to inaugurate the approaches that are to be copied later in order to reduce environmental interrelated expenses resulting in companies' production activities". Ding (2019) did a study on Taiwanese companies that were certified with ISO 14001 for environmental management starting from the financial aspect. On behalf of 108 samples, their environmental performances have a considerable negative impact on financial status. Similarly, Huang (2020) asserts that the use of environmental management ISO 14001 could enhance business competitiveness and establish that only extra expenses are incurred and not profits.

Green accounting has a significant impact on financial performance, according to Ding (2019). This means that the company has disclosed positive information about green accounting disclosure. Ezeagba *et al.* (2017) and Andries and Stephan (2019) also agree with this study, who are of the opinion that green accounting application measured using PROPER has a significant effect on mining company profitability. However, contrary to the findings of Rokhmawati *et al.* (2015) and Wiranty and Kartikasari (2018), "PROPER rating remains unpopular among the public and investors. Investors seeking company information will go to other websites or media, whereas information about proper rankings as an effort to preserve the company's environment falls under the purview of the Ministry of Environment and Forestry. This can occur due to a lack of public awareness of government awards for environmental preservation efforts. Using the Company Performance Assessment Program, the Ministry of Environment and Forestry evaluates the company's environmental management, including waste management (PROPER). As a result, the debate in the literature leads the researcher to determine how green accounting affects company financial performance.".

Furthermore, to analyse the influence factors, this study used the KJ (Kawakita Jiro) method and the meta-research method. The question of whether green design is feasible was then raised" (Guan, 2019; Wadesango *et al.*, 2020a). "The KJ method is a technique for organizing and grouping various types of data and information to thoroughly clarify the contents of seemingly unrelated events. The classification and integration processes can lead to the discovery of new meanings for events". According to Guan (2019), "it was created by Japanese scholar Kawakita Jiro. The findings revealed that the requirements of green accounting include expanding corporate social responsibility, production cannot be exempted from environmental protection, the manufacturing of clean products can generate pollution, the external production cost should be internalized, there is a design to improve the product production, which cannot be exempted from environmental protection, the manufacturing of clean products can generate pollution, the external production cost should be internalized, there is a design to improve the product and implement the 3R policy (Reduce, Recycle, Reuse), lifecycle assessment for all assessments, and developing environmentally friendly products that can be solved with green design.". "Green accounting has a positive impact on financial performance because enterprises must improve product design, such as green innovation or product redevelopment, in order to maintain current profits or lower costs." (Guan, 2019)

On the other hand, according to Aniela (2017), "green accounting is mandated by the government and companies are required to internalize the external costs of production activities, which raises production and operational costs and reduces profits, establishing a negative relationship between green accounting and financial performance". Ratulangi (2018) agree with Guan (2019) that "the benefit of a company using green accounting is that it provides information for companies to develop strategies that will be used later to reduce environmental-related expenditures incurred because of the company's production operations. Companies must also be able to use and manage the waste generated by their industrial operations". However, "corporations do not prioritize precision in the use of natural resources and do not prioritize the ability to correctly utilize and manage production waste" (Aniela, 2017). According to Aniela (2017), "accuracy that focuses solely on natural resource utilization is not a priority. As a result of these discrepancies, the researcher decided to conduct a detailed research study on the relationship between green accounting policies and company financial performance".

Last but not least, according to the minutes taken in the Parliament (2020) "the minister of mines and mining development, Honourable Chitandiwa, stated that environmental accounting methods provide companies in the mining sector, particularly those with large extraction of minerals operation, for instance Zimplats Unki mine and Jena mines amongst other mines, with sufficient information on the way they conduct their resource extraction and the manner in which they should account for social expenditures. On the other hand, Honourable Kambura, the deputy minister of mines and mining development, conveyed the message about the challenges that companies in the mining sector are facing towards accounting for pollution that resulted in the degradation of the surroundings they are conducting their work.”. (Guan, 2019)

Once more, the minister underlined the importance of a mining company's adhering to the environmental impact, assessment legislations, as well as some environmental regulations imposed by environmental management agencies. The performance of a mining company that does not account for damages, such as siltation in rivers, vibrations created by trucks used for dump purposes and disruption of ecosystem does not reflect the genuine financial status of mining companies. According to Guan (2019), “the president of Zimbabwe, his excellence Mnangagwa, stated that there is an outcry from communities because mining destroys farms, results in siltation and destroys grazing lands. His excellence also stated that the dangerous chemicals used during mining operations endanger the lives of villagers. As a result, the businesses must take into consideration the social expenditures imposed on surroundings. In contrast, Minister Mtuli Ncube stated during the presentation of financial budgets for 2020 that green accounting benefits the financial performance of mining enterprises more, rather than causing harm.”. This literary argument makes room for additional research.

■ ***The benefits of green accounting implementation***

Environmental expenditures are just one of major expenses that businesses must bear when purchasing goods and services, so in the modern world, environmental performance is a crucial merit for gauging a company's success. Managers have become interested in environmental costs and their function for the following reasons:

- “Many of the major environmental expenses could be greatly reduced or eliminated because of business decisions.” (Guan, 2019)
- “Gaining revenue from the sale of useless by-products or earning green technology certification might help offset many environmental costs.” (Guan, 2019)
- “Better green accounting cost management can lead to improved environmental performance, which have a substantial positive impact on the health of humans, as well the success of the business.” (Phillips, 2012)
- “Environmental performance and environmental accounting can help a business and its processes grow, in terms of its environmental management system.” (Phillips, 2012)

In addition, green reporting should be a part of environmental accounting, because it is critical for managers of green accounting disclosure to be conscious of green performance (managers of information want to require the need to have updates on the achievements of the business regarding its relationship with the society and the exposure of green expenses information (Phillips, 2012). Therefore, environmental reporting “will ultimately result in a rise in corporate value, maximizing shareholders' wealth, sustainable expansion of the company and other things” (Aniela, 2017). Phillips (2019) also alluded that “implementing green accounting policies assists in pollution control”.

“One of the advantages of green accounting is that it results in decreasing pressure from stakeholders. It is obvious that stakeholders are putting more and more pressure on firms to acknowledge the environmental harm they are creating. Environmental accounting assists companies in avoiding these constraints, encourages them to innovate and develop methods for minimizing environmental impact and improving sustainable resource management.” (Deegan, 2016)

■ ***Factors that affect the implementation of green accounting***

The company's environmental performance is measured using a Likert scale, according to Phillips (2019), who described green industry as one that emphasizes the effectiveness and usefulness of using sustainable resource usage in the industrial process. “To balance industrial expansion with the continuing feasibility of environmental purposes while doing good to the greater community.” (Guan, 2019) “On the other hand, because there is still much to be prepared in terms of green industry polices, such as inaugurating green industry certification organizations to strengthen certification, this accomplishment is still a long way off in 2021." (Phillips, 2012) "The government assesses how successfully the company's environmental management is employed. Using the Company Performance Assessment, the Ministry of Environment and Forestry evaluates the company's environmental management, including waste management." (Guan, 2019) In terms of achieving and reducing industrial waste contamination, PROPERs implementation has implications for Indigenous peoples and corporate forests. "PROPER compliance fell in, 2018, exacerbated by a lack of concern for environmental performance. PROPER is a publicly available environmental performance metric for businesses." (Philips, 2012; Wadesango & Ncube, 2020)

Furthermore, noncompliance is decreasing, according to Lukas (2015), because "there is no financial gain for the corporation". "Green businesses are bad for a company's commercial growth, but they are good for government spending, because the government does not have to spend money on environmental sustainability assets." (Lukas, 2015) "Accountants can undoubtedly become a powerful forearm of the government in terms of economic and financial controls to establish an ideal system of environmental accounting in the country. To accomplish this goal, environmental accounting objectives and tasks must be identified and defined in detail, and standards, rules and criteria must be grounded in reasonable and practical principles." "As a result, competent professional conventions should take on the task of codifying and adjusting professional rules, particularly environmental accounting standards, so that companies are required to follow the approved process." (Lukas, 2015)

Furthermore, a study by Shumba (2015) on Zimbabwe mining firms found the following factors as hinderers to the implementation of green accounting policy.

✓ *Lack of knowledge about green accounting*

The results from the surveys showed that there is a little connection between green accounting knowledge gaps, and the lack of green accounting implementation have little to do with lack of knowledge about environmental accounting (Guan, 2019). "Most responders from both the mining companies and government organization understood what green accounting was, without a doubt. This was further supported by the fact that no differences in the responses were seen in the follow-up interviews. Only 6.25% of mining businesses management did not know what green accounting is, compared to 18.75% that have a general comprehension. In a survey on the same topic, roughly 80% of respondents from government organizations said that lack of familiarity with the field had nothing to do with the mining industry's failure to implement green accounting, while the remaining 20% disagreed." "As a result, it was shown that factors other than a lack of awareness about green accounting account for a major portion of the reasons why environmental accounting is not widely used." (Guan, 2019; Wadesango *et al.*, 2020d)

✓ *Mining firms' reluctance*

When the same group of respondents were questioned, these measures were not detailed, but 43.8% of the representatives of mining businesses responded that no measures were being implemented in the mining sector and 31.3% said that little was being done to pursue green accounting (Phillips, 2012). "Only 12.5% of respondents said that certain mining corporations have taken action to address green accounting problems. The remaining 12.5% showed that green accounting was not required of mining firms." (Guan, 2019) "The remaining 12.5% indicated that mining companies were not mandated to pursue environmental accounting. Government representatives had largely similar comments, with 50% of them stating that mining companies are too unwilling to apply green accounting procedures and that no such measures have been put in place." (Guan, 2019) "Although members agreed that mining firms were being reticent in implementing green accounting, 30% of government respondents claimed that the mining sector was only making insignificant environmental efforts, while 20% claimed that firms are not reluctant to adopt green accounting. This overcomes the conclusion that there is resistance to implementing policies that solve environmental issues at the corporate and governmental levels and surmounts the conclusion that there is reluctance in putting measures that eradicate environmental problems at company and national levels". (Guan, 2019)

✓ *Organizational value associated with green accounting issues*

The study found that 56.25% of mining firms don't consider the value green accounting, while 25% give it moderate significance, 12.5% think it's important, and only 6.25% think it's very crucial, supporting the idea that there is hesitation in the mining sector to adopt green accounting (Guan, 2019). This demonstrated not only that green accounting is being adopted with reluctance, but also that there is a general lack of acceptance in the mining industry, which is related to a lower regard for the topic.

✓ *The inefficiency of environmental regulatory organizations*

According to 50% of mining executives who claimed there are no independent regulatory authorities that evaluate green accounting procedures, regulatory agencies are not doing enough to enforce green accounting policies. In comparison to 38% of the executives who were apathetic, 12% of the executives confirmed that regulatory organizations evaluate green accounting issues (Wadesango *et al.*, 2020b). On the other side, every government agency vehemently asserted that the mining industry is overly politicized to the point where it interferes with their efforts to control environmental hazards. This is also consistent with what most community leaders who were surveyed expressed agreement with. Most community leaders concurred that the mining industry is politicized and that they barely witnessed by independent regulatory organizations overseeing mining operations in their communities. The results supported the assertion that regulatory organizations are failing to effectively supervise and regulate the mining industry.

3. Research methodology

The research process for this study was meticulously designed to ensure that the methodology adhered to the objectives set out in the project. It began with the selection of a quantitative research approach, allowing for statistical analysis and objective measurement of data relevant to green accounting and financial performance. The target population was defined as employees from the finance, audit, and procurement departments who possessed knowledge of green accounting. Given the small size of the target population of 27 participants, the researchers opted for a census rather than sampling, ensuring comprehensive data collection without the potential biases that could arise from a sample. This decision facilitated detailed insights that might be lost in a smaller, non-representative sample, as all participants could provide meaningful contributions to the study's outcomes. Data was collected using structured research instruments, primarily questionnaires designed to gather quantitative information efficiently and effectively. These questionnaires included a combination of dichotomous questions, multiple-choice items, and open-ended responses, allowing for a rich dataset that could be statistically analyzed. The use of the Likert scale for measuring attitudes provided nuanced insights into the participants' perspectives on green accounting. Following data collection, statistical software such as Microsoft Excel was employed to analyze the results, enhancing the presentation and understanding of the findings through charts, graphs, and tables. This systematic approach ensured that the research findings were both valid and reliable, providing a robust basis for conclusions regarding the relationship between green accounting practices and financial performance among the targeted departments.

The table below indicates the population that was examined and the data collection method used.

Table 1. Population and sampling

Department	Target population	Censors' population	% of population	Data collection method
Finance	18	18	67	Questionnaires
Audit	4	4	15	Questionnaires
Procurement	5	5	18	Questionnaires
Total	27	27	100	

4. Data presentation, analysis and discussion

4.1. The impact of green accounting on financial performance of Jena mine

Figure 1 indicates that 10 (62.5%) of the respondents agreed that green accounting positively affects the financial performance of Jena mine, because implementing green accounting will incorporate social costs that will result in ascertaining their accurate financial status, thereby effect essential measure required to improve the returns. This is braced by Nwosa (2018), who claimed that green accounting practices have a beneficial impact on their financial performance, because they allow them to determine their genuine financial performance and take the drastic steps necessary to improve it. On the other hand, the remaining six (37.5%) respondents agreed that environmental accounting affects negatively the performance of the mine, because environmental protection measures really add more damage, rather than worth in the statements of financials of companies in the mining sector from the time when they mandate the disclosure of marginal external expense. This is in support of Makanga (2018) on effects of environmental accounting policies on African companies. These policies have a detrimental effect on business financial performance, because they call for companies to include green accounting costs like externality overheads in their statements of financial position, which drives up expenses and reduces a company's profitability.

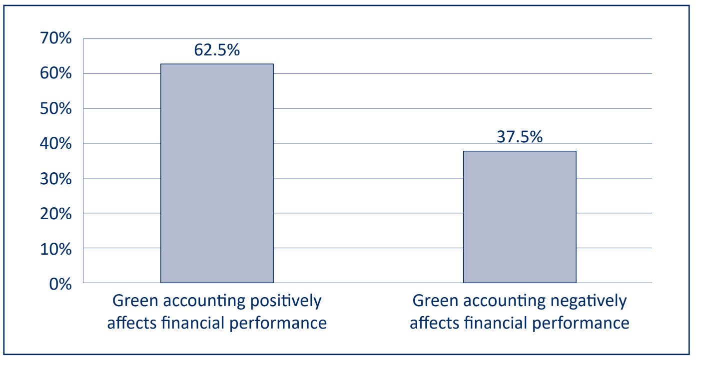

Figure 1. Impact of green accounting on financial performance

Source: Own research.

4.2. Government law enforcement

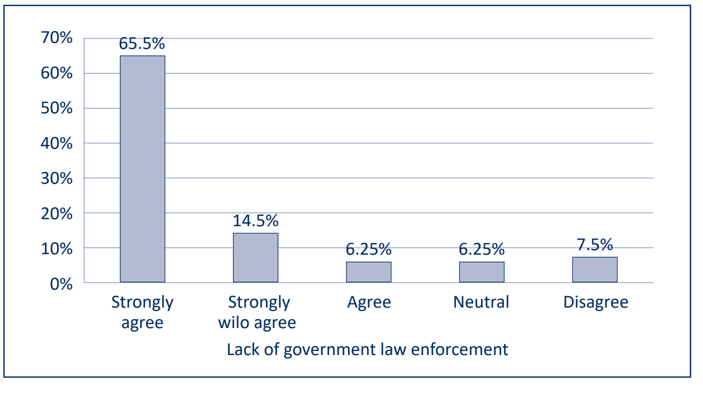

Figure 2. Government law enforcement as an obstruction

Source: Own research.

The results provide compelling evidence that the government is not doing enough to uphold the rules that guarantee green accounting implementation. As seen in Figure 2, 87.5% of the representatives from the mining sector concurred that the government must do more to encourage the adoption of green accounting. Therefore, 65.5% of the respondents strongly agreed, 14.5% somewhat agreed, and the remaining 6.25% merely agreed that there are no rules requiring the application of green accounting. The representatives of the mine agreed that the low level of green accounting adaptation is entirely caused by other factors than a lack of enforcement laws, with only 7.5% disagreeing with these ideas. Those who were neutral did not offer any additional explanations that are obstructing green accounting in Zimbabwe. When discussing the same topic, 70% of government organizations agreed that it is very difficult to execute green accounting laws in Zimbabwe, since the mining industry is heavily influenced by politics and the country's main engine to the implementation of green accounting in mining industry is a lack of government law enforcement. (Wadesango & Magaya, 2021)

Zhuwarara (2020) had previously discovered that Zimbabwe lacked the enforcement of the legal and policy framework for the mining sector. Wadesango *et al.* (2021) last to support the findings. The research also showed that present government policies are inadequate in terms of both sufficiency and enforcement, which is consistent with the conclusions above. The existing government policies are insufficient in promoting green accounting, according to 16 of the 17 respondents from the government agencies. They confirmed that there is a lack of willingness on the part of the government to enact laws "that require the adoption of green accounting in Zimbabwe". This explains why businesses don't try to address green accounting in Zimbabwe. This explains why businesses don't try to address green accounting difficulties. Jones-Christensen *et al.* (2014) similarly discovered the same results and stated that "for environmental accounting projects to be successful, governments must set proper regulations".

Furthermore, Zaman (2018) agreed on a study carried in Nigeria on the following recommendations offered for green accounting:

- "To improve the business operational environment and financial performance, management of mining firms ought to give more attention to environment charges. Additionally, since most mining firms hardly ever report their environmental activities, the government should pass legislation requiring them to incorporate environmental concerns into their strategic planning process. They should also publish environmental accounting standards on an international and local level, that can be continuously reviewed to ensure compliance." (Zaman, 2018)
- "Mining firms' management should use green accounting effectively to lessen the environmental impact of their operations. Additionally, mining businesses should make sure they abide by the country's environmental rules, as it will greatly improve their performance." (Wadesango *et al.*, 2021)
- "For a friendly relationship to be established between the mining industries and the host communities, environmental awareness within the communities should be promoted. The activities of mining firms should also be planned to minimize waste and emissions." (Zaman, 2018)

5. Conclusions

In conclusion, this study contributes significantly to the existing body of knowledge on green accounting policies and their impact on the financial performance of mining companies. By employing a quantitative approach and focusing on a specific sector, this research offers novel insights into how green accounting practices can lead to innovations that not only enhance operational efficiency but also elevate corporate reputations within the competitive landscape. The originality of this paper lies in its focused exploration of the mining sector, a field often scrutinized for its environmental impact but previously underexplored in terms of the financial benefits derived from green accounting. By bridging the gap between environmental management and financial performance, this research highlights the critical interplay between sustainable practices and economic outcomes, thus offering a fresh perspective that has not been extensively discussed in the literature.

Moreover, the findings underscore the importance of integrating environmental concerns into corporate financial strategies. This is particularly relevant in today's context, where stakeholders are increasingly demanding accountability in environmental practices. By establishing a clear link between green accounting and improved financial performance, this study not only enhances our understanding of strategic corporate sustainability, but also emphasizes the role of accountants as key players in driving the adoption of environmentally sound practices in the mining industry. The implications for policymakers and corporate leaders are profound. As accountability in environmental performance becomes paramount, the adoption of structured environmental accounting standards may serve as a catalyst for broader industry change. This study advocates for the establishment of comprehensive environmental accounting frameworks, encouraging corporations to align their profitability with sustainability missions. As such, this research is essential for stakeholders aiming to navigate the complex relationship between economic goals and environmental stewardship, establishing a pathway toward sustainable growth that is both economically and ecologically viable.

Considering these insights, further research is encouraged to explore the longitudinal effects of green accounting policies across different sectors, potentially enriching the discourse on corporate sustainability and financial performance.

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